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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/598,631	06/21/2000	Robert Daniel Maher III	NR-2	6324

7590
08/02/2004
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EXAMINER

LEMMA, SAMSON B

ART UNIT	PAPER NUMBER
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2132

DATE MAILED: 08/02/2004

3

Please find below and/or attached an Office communication concerning this application or proceeding.

86

Office Action Summary

Application No.

09/598,631

Applicant(s)

MAHER ET AL.

Examiner

Samson B Lemma

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Claims 1-16 have been examined.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections

set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1- 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kloth (U.S. Patent No. 6,598,034) in view of Lorrain et al (hereinafter referred as Lorrain)(U.S. Patent No. 6,636,512).

4. As per claim 1, Kloth discloses a method for preventing denial of service attacks over a data

network including a plurality of traffic flows each formed by a plurality of data packet, the method comprising:

scanning the contents of the data packet; (column 4, lines 40-43)

verifying that the data packets conform to a set of predetermined

requirements; (column 4, lines 40-45; column 6, lines 18-20; column 5, lines 4-10]

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checking if the data packet is associated with a validated traffic flow; and [column 10, lines 38-46; column 10, lines 55-57]

kloth discloses that a rule (requirement) generator for providing rules for processing the data packets according to the analyzed bit patterns; and the rules are applied to the bit patterns which are parsed from the IP flow and IP packets traffic types and priorities resulting from application of the rules (requirements) are mapped onto the existing Quality of service (QOS) assignments.(column 16, lines 43-49). Kloth further discloses the different service level can be used to further decide the appropriate routing speed (priority) to be applied to the data packet.(column 7, lines 45-49).

Kloth does not explicitly teach placing the data packet in a higher priority quality of service if the data

packet is associated with a validate traffic flow; and to a low priority quality of service if it is not associated with a validate traffic flow. However, Lorrain discloses reserving bandwidth for higher priority quality of service if the data packet is associated with a Real Time (RT) traffic (interpreted as “validated traffic” by the office) and serving the packet that is associated with Non Real Time (NRT) traffic (interpreted by the office as “non validated traffic”) with lower quality of service, after the all higher priority traffic has been served.(column 2, lines 20-37).

Accordingly, It would have been obvious to one having ordinary skill in the art at the invention was made to combine the Kloth’s assignment of different Quality of service as per teachings of Lorrain’s in order to prevent denial of service by placing the data packet in a higher priority quality of service if the data packet is associated with a Real Time or validated traffic flow and to a low priority quality of service if it is not associated with a Real Time traffic flow (validated traffic flow).

5. As Claim 7, Kloth discloses the method of preventing denial of service attacks on a data network

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which includes a plurality of traffic flows each formed by multiple data packets having header and payload information, the method using a network device comprising a traffic flow scanning engine; and a quality of service processor having a low priority queue and higher priority queues, the method comprising:

scanning the header information using traffic flow scanning engine; (column 4, lines 40-43; column 3, lines 62-63)

reordering and reassembling the data packets using the traffic flow scanning engine; [column 7, lines 26-28]

flagging data packets that do not reorder or reassemble correctly to be dropped; [column 12, lines 5-11]

scanning the payload contents using the traffic flow scanning engine; [column 8, lines 37-47; column 3, lines 62-63; column 10, lines 38-42]

determining whether the data packets conform to a set of predetermined requirements; [column 4, lines 40-45; column 6, lines 18-20; column 5, lines 4-10]

flagging data packets that do not conform to be dropped; [column 5, lines 4-10]

checking if the data packets are associated with a validated traffic flow; and [column 10, lines 38-46; column 10, lines 55-57]

kloth discloses that a rule (requirement) generator for providing rules for processing the data packets according to the analyzed bit patterns; and the rules are applied to the bit patterns which are parsed from the IP flow and IP packets traffic types and priorities resulting from application of the rules (requirements) are mapped onto the existing Quality of service (QOS) assignments. (column 16, lines 43-49). Kloth further discloses the different service level can be used to further decide the appropriate routing speed (priority) to be applied to the data packet. (column 7, lines 45-49).

Kloth does not explicitly teach assigning the data packets to a higher priority quality of service if the data

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packet is associated with a validate traffic flow; and to a low priority quality of service if the data packet is not associated with a validate traffic flow. Kloth does not also explicitly teach flagging the data packets that do not reorder or reassemble correctly to be dropped and flagging data packets that do not conform to be dropped.

However, Lorrain discloses reserving bandwidth for higher priority quality of service if the data packet is associated with a Real Time (RT) traffic (validated traffic) and serving the packet that is associated with Non Real Time (NRT) traffic or non validated traffic with lower quality of service, after the all higher priority traffic has been served. (column 2, lines 20-37).

Lorrain further discloses that packets that are dropped with in the network are flagged as discardable packets through the use of so- called Discardable Eligibility (DE) identifier bit. [column 2, lines 17-19]

Accordingly, It would have been obvious to one having ordinary skill in the art at the invention was made to combine the Kloth's assignment of different Quality of service and at the same time flagging of the dropped packets as per teachings of Lorrain's in order to prevent denial of service by assigning the data packet in a higher priority quality of service if the data packet is associated with a Real Time or validated traffic flow and to a low priority quality of service if it is not associated with a Real Time traffic flow (validated traffic flow) and drop packets that do not satisfy the requirements.

6. As per claim 12, Kloth discloses a network device for preventing denial of service attacks on a data

network which includes a plurality of traffic flows each formed by multiple data packets having contents including header information and payload information, the network device comprising:

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a traffic flow scanning engine operable to scan the header and payload information of the data packets, to associate each data packet with a particular traffic flow and to determine whether each traffic flow is a validated traffic flow or a non-validated traffic flow, wherein the traffic flow scanning engine is further operable to reorder and reassemble the data packets and to verify that the data packet conforms to predetermined requirements such that the traffic flow scanning engine produces a conclusion associated with each data packet; and (column 4, lines 40-43; column 3, lines 62-63; column 3, column 8, lines 37-46; column 3, lines 62-63; column 7, lines 30-49; column 7, lines 26-28; column 4, lines 40-45; column 6, lines 18-20; column 5, lines 4-10; column 4, lines 12-13].

Kloth discloses a quality of service processor connected to the traffic flow scanning engine and operable to place the data packets into a quality of service queue from a plurality of quality of service queues based on the conclusion from the traffic flow scanning engine,(column 7, lines 41-45; column 12, lines 60-67, figure 11]

kloth discloses that a rule (requirement) generator for providing rules for processing the data packets according to the analyzed bit patterns; and the rules are applied to the bit patterns which are parsed from the IP flow and IP packets traffic types and priorities resulting from application of the rules (requirements) are mapped onto the existing Quality of service (QOS) assignments.(column 16, lines 43-49). Kloth further discloses the different service level can be used to further decide the appropriate routing speed (priority) to be applied to the data packet.(column 45-49].

Kloth does not explicitly teaches a quality of service processor connected to the traffic flow scanning engine and operable to place the data packets into a quality of service queue from a plurality of quality of service queues based on the conclusion from the traffic flow

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scanning engine, wherein data packet from non-validated traffic flows are assigned to a low priority queue and data packets from validated traffic flow are assigned to a higher priority queue based on its contents. However, Lorrain discloses reserving bandwidth for higher priority quality of service if the data packet is associated with a Real Time (RT) traffic (validated traffic) and serving the packet that is associated with Non Real Time (NRT) traffic or non validated traffic with lower quality of service, after the all higher priority traffic has been served. (column 2, lines 20-37).

Accordingly, It would have been obvious to one having ordinary skill in the art at the invention was made to combine the Kloth's assignment of different Quality of service as per teachings of Lorrain's in order to prevent denial of service by assigning the data to a low priority quality queue for the data packet if it is not associated with a Real Time traffic flow (validated traffic flow) and assigned to higher priority queues based on its content.

7. As per claim 2, the combination of Kloth and Lorrain teach the method as applied to claim 1 above. Furthermore Kloth teaches the method wherein verifying includes insuring that the data packet reorder and reassemble according to a defined policy and insuring that the data packets conform to required parameters. (column 7, lines 26-28; column 6, lines 32-35; column 5, lines 4-10).

8. As per claim 3, the combination of Kloth and Lorrain teach the method as applied to claim 1 above. Furthermore Kloth teaches the method further comprising between verifying and checking:

dropping the data packet if it does not conform to the set of predetermined requirements. (column 5, lines 4-10)

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9. As per claim 4, the combination of Kloth and Lorrain teach the method as applied to claim 3 above. Furthermore Kloth teaches the method wherein scanning includes scanning of the

data packet's header information and scanning of the data packet's payload contents.(column 8, lines 40-42]

10. As per claim 5, 8 and 16 the combination of Kloth and Lorrain teach the method as applied to claim 1, 7 and 12 above. Furthermore Kloth teaches the method wherein the predetermined requirements

include packet length, non-overlapping offset fields, and adherence to protocol standards. (column 4,lines 5-8]

11. As per claim 6 and 11, the combination Kloth and Lorrain teach the method as applied to claim 5 and 7 above. Furthermore Lorrain teaches the method wherein the validated traffic flows are

identified by a state associated with each traffic flow.(column 2, lines 20-37;column 12, lines 17-19]

12. As per claim 9, the combination Kloth and Lorrain teach the method as applied to claim 7 above. Furthermore Lorrain teaches the method wherein flagged data packets are dropped by the traffic flow scanning engine. (column 2, lines 15-19]

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13. As per claim 10, the combination Kloth and Lorrain teach the method as applied to claim 7 above. Furthermore Lorrain teaches the method wherein flagged data packets are dropped by the quality of service processor [column 2, lines 15-19]

14. As per claim 13, the combination Kloth and Lorrain teach the method as applied to claim 12 above. Furthermore Lorrain teaches the method wherein the low priority queue is assigned to a maximum percentage of network bandwidth. (column 2, lines 31-36)

15. As per claim 14, the combination Kloth and Lorrain teach the method as applied to claim 12 above. Furthermore Kloth teaches the method wherein traffic packets that do not reorder or reassemble correctly and data packets that do not conform to the predetermined requirements are dropped by the network device.[column 12, lines 5-10]

16. As per claim 15, the combination Kloth and Lorrain teach the method as applied to claim 12 above. Furthermore Lorrain teaches the method wherein the traffic flows are identified by a state associated with each traffic flow, the state representing whether the traffic flow is validated or non-validated.[column 2, lines 20-37].(It is interpreted by the office that Real Time traffic are considered to be a validated traffic and on the hand Non Real Time Traffic are considered to be Non-Validated traffic).

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samson B Lemma whose telephone number is 703-305-8745. The examiner can normally be reached on Monday-Friday (8:00 am---4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BARRON JR GILBERTO can be reached on 703-305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAMSON LEMMA

07/21/2004

Justin T. Darrow
JUSTIN T. DARROW
PRIMARY EXAMINER